

REMARKS

Claims 1-17 are currently pending in this application. Favorable reconsideration and allowance is respectfully requested. The claims are rejected and objected to based on various cited prior art, including Weinstein et al (6,902,590), Tran et al (6,602,112), Antonell et al (6,899,596), Minamihaba et al (6,858,539), and Tseng (6,455,428). It is believed the following remarks and arguments, and the foregoing amendments, will overcome these objections and rejections. It is also noted with appreciation that claims 9, 13 and 17 are now considered allowable if rewritten in independent form.

Independent claim 1 and dependent claim 12 stand rejected as being obvious over Weinstein (USP 6,902,590) in view of Tran (USP 6,602,112). The Examiner relies on Tran for the purported disclosure of a sulfonic acid that comprises an acid moiety substituted onto a carbon ring structure, and a polar moiety substituted on the ring structure in an ortho position from the sulfonate moiety, citing cloumn 3 at lines 25-49. Applicants respectfully traverse. Tran discloses at column 3 lines 25-49 :

complexing agents ... having at least two acid moieties present in the structure, which can affect complexation to the target metal, such as copper. These include, but are not limited to, carboxyl, carboxylate, hydroxyl, sulfonic and phosphonic groups. Carboxylate and hydroxyl groups are preferred Particularly effective are structures which possess two or more carboxylate groups with hydroxyl groups in an alpha position, such as straight chain mono- and di-carboxylic acids and salts including, for example, malic acid and malates, tartaric acid and tartarates and gluconic acid and gluconates. Also effective are tri- and polycarboxylic acids and salts with secondary or tertiary hydroxyl groups in an alpha position relative to a carboxylic group such as citric acid and citrates. Also effective are compounds containing a benzene ring such as ortho, di- and polyhydroxybenzoic acids and acid salts, phthalic acid and acid salts, pyrocatecol, pyrogallol, gallic acid and gallates and tannic acid and tannates. The most preferred complexing agents of the present invention will tend to complex with metal anions, forming a 5 or 6 member ring, whereby the metal atom forms a portion of the ring.

Contrary to the Examiner's assertion, nowhere does Tran disclose a benzene ring structure having a sulfonate in an alpha position with another polar moiety. Tran only discloses: 1) use of complexing agents having at least two acid moieties such as carboxyl, carboxylate, hydroxyl, sulfonic and phosphonic groups present in the structure; 2) structures which possess two or more carboxylate groups with hydroxyl groups in an alpha (ortho if on a ring) position, such as straight chain mono- and di-carboxylic acids; and 3) compounds containing a benzene ring such as ortho, di- and polyhydroxybenzoic acids and acid salts. The Examiner is believed to be opining that one of ordinary skill in the art would interpret the disclosure of alphahydroxybenzoic acid to suggest use of meta hydroxybenzosulfonic acid. Such a compound is clearly not taught by Tran. Claim 12 depends from claim 1. Applicants respectfully request that this rejection of independent claim 1 be reconsidered and withdrawn.

Dependent claims 2 and 10 (as well as claims 3-8 and 11 depending therefrom) stand rejected as being obvious over Weinstein (USP 6,902,590) in view of Tran (USP 6,602,112) and further in view of Antonell (USP 6,899,596). Claims 3-8 depend on claim 2, and claim 11 depends on claim 10. Both claim 2 and claim 10 recite that the "organosulfonic acid oxidizer has an electrochemical oxidation potential greater than 0.7 V" Applicants traverse.

Antonell does not remedy the deficiency of Weinstein and Tran, alone or in combination. The Examiner contends that Antonell discloses a CMP method having benzene having a dipole moment of less than 1.4. The dipole moment of various solvents disclosed in Antonell is not believed to be related to the oxidizing potential of the compound, which seems to be what the Examiner is contending on page 3-4 of the Office Action. We respectfully request the Examiner show us any reference which teaches the dipole moment of a solvent is related to the oxidizing potential of the solvent. Additionally, even if such a relationship exists, Antonell prefers lower dipole moments, and with respect to polar-moiety-substituted benzenes, the lowest dipole moment can be found in para-substituted benzenes (the substituted benzene compounds specifically excluded from the independent claims 1, from which both claims 2 and 10 depend). Applicants respectfully request that this rejection be reconsidered and withdrawn.

Claims 14-16 stand rejected as being obvious over Minamihaba (USP 6,858,539) in view of Tran (USP 6,602,112) and further in view of Tseng (USP 6,455,428).

Claims 14-16 relate to a method of cleaning a semiconductor substrate. Tseng is used to provide disclosure of a method for cleaning. Claim 14 is a method of post CMP cleaning using a

“fluid cleaning composition comprising an organosulfonic acid oxidizer, said organosulfonic acid oxidizer having a ring structure comprising carbon, a sulfonate moiety substituted onto a carbon atom in the ring structure, and a polar moiety substituted onto the ring on an ortho position or a meta position from the sulfonate moiety.” In contrast, Minamihaba discloses a post-CMP cleaning fluid comprising dodecylbenzene sulphonate. As can be appreciated by one of skill in the art, the benzene sulfonic acid compound of Minamihaba has a C12 alkyl group attached in the ortho position to the sulfonate, and this C12 alkyl group is about as non-polar as a moiety can be. Further, Minamihaba at column 4 lines 19-28 discloses that the dodecylbenzene sulphonate is a surfactant. It is commonly known in the field of chemistry that a surfactant must comprise a polar section (e.g., a sulfonate moiety) and a non-polar section (e.g., a long chain alkyl moiety).

The Examiner relies on the teaching of Tran to provide the claimed compound. The deficiency of Tran was discussed in relation to claim 1, and that argument is incorporated herein by reference thereto.

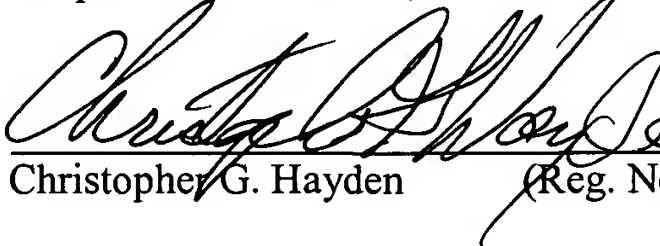
There is no motivation for one of ordinary skill in the art to substitute the chelating agent of Tran in for the surfactant of Minamihaba. The compounds have completely different structures and functions. Tseng does not remedy the deficiencies of Tran and Minamihaba alone or in combination. For these reasons, Applicants respectfully request that this rejection be reconsidered and withdrawn.

No fee is believed due for the submission of this Response. Please charge the required fee to **Morgan, Lewis & Bockius LLP** Deposit Account No. 50-0310. A duplicate of this authorization is attached for the Finance Branch.

Date May 15, 2006
(filed after weekend due date)

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